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From the INTERNATIONAL SEARCHING AUTHORITY

To:

FAHMI, Tarek N.
Seventh Floor
12400 Wilshire Boulevard
Los Angeles CA 90025-1030
UNITED STATES OF AMERICA

NOV 01 2004

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION
OF THE INVENTOR'S OPINION ON THE
PRIORITY OF THE INVENTION

ENTERED

NOV - 2 2004

STATUS DRA

(PCT Rule 44.1)

Date of mailing
(day/month/year)

29/10/2004

Applicant's or agent's file reference

6317P100PCT

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US2004/012468

International filing date
(day/month/year)

22/04/2004

Applicant

APPLIED MATERIALS ISRAEL, LTD.

PROCESSED BY
DOMESTIC
ADMINISTRATOR

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
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Authorized officer

Christine Voigt

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6317P100PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2004/012468	International filing date (day/month/year) 22/04/2004	(Earliest) Priority Date (day/month/year) 25/04/2003
Applicant APPLIED MATERIALS ISRAEL, LTD.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1A

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2004/012468

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

An objective lens arrangement for mounting in a charged particle beam column adjacent to an anode tube that defines a beam drift space for a charged particle beam propagating towards a sample (5). The lens arrangement comprises a magnetic lens (14) and an electrostatic lens (16), wherein the eletrostatic lens includes upper (16C') and lower electrodes (16C) arranged in a spaced-apart coaxial relationship along an optical axis (OA) of the lens arrangement.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01J37/145

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 407 388 B1 (FROSIEN JUERGEN) 18 June 2002 (2002-06-18) column 2, line 17 - line 21 -----	1, 2, 5, 8, 18-22, 26
X	US 4 926 054 A (FROSIEN JUERGEN) 15 May 1990 (1990-05-15)	1-3, 5-7, 9, 11, 18-21 13
Y	----- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

20 October 2004

Date of mailing of the international search report

29/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Oestreich, S

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FROSIEN J ET AL: "COMPOUND MAGNETIC AND ELECTROSTATIC LENSES FOR LOW-VOLTAGE APPLICATIONS" JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY: PART B, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 7, no. 6, 1 November 1989 (1989-11-01), pages 1874-1877, XP000117179 ISSN: 1071-1023</p>	
Y	<p>WO 99/46797 A (ESSERS ERIK) 16 September 1999 (1999-09-16) page 14; figure 4</p>	13

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

Continuation of Box II.2

Claims Nos.: 23-25

Present claims 23-25 relate to a method defined by reference to a desirable characteristic or property, the chromatic aberration to be achieved.

Claims 23-25 lack technical features which are needed to achieve this goal. In particular no method features which contribute to achieving this goal are present, despite the formulation of the claims as method claims.

The corresponding part of the description outlines that these values have been measured, and that the lens arrangement of the invention provides for that performance (page 15, second line). From the description, it is clear that the required technical features achieving the desiderata named in claims 23-25 are of apparatus nature.

As the application contains 19 apparatus claims, the International Search Authority supposes that the applicant has taken care of that all details contributing to achieve the desiderata named in claims 23-25 are sufficiently covered by these apparatus claims. The latter have been subject of the international search without limitation.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/012468

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 23-25
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6407388	B1	18-06-2002	NONE	
US 4926054	A	15-05-1990	DE 58907728 D1 EP 0333018 A2 JP 1298633 A JP 2887602 B2	07-07-1994 20-09-1989 01-12-1989 26-04-1999
WO 9946797	A	16-09-1999	DE 19845329 A1 WO 9946797 A1 EP 1068630 A1 JP 2002507045 T US 6590210 B1	23-09-1999 16-09-1999 17-01-2001 05-03-2002 08-07-2003

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/012468

International filing date (day/month/year)
22.04.2004

Priority date (day/month/year)
25.04.2003

International Patent Classification (IPC) or both national classification and IPC
H01J37/145

Applicant
APPLIED MATERIALS ISRAEL, LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Oestreich, S

Telephone No. +49 89 2399-7037



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 17,23-25,27

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 17,27 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 23-25

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form ☐ has not been furnished

☐ does not comply with the standard

the computer readable form ☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See separate sheet for further details

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1,2,5,8,18-22,26
Inventive step (IS)	Yes: Claims	
	No: Claims	3,4-16
Industrial applicability (IA)	Yes: Claims	1-16,18-22,26
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item III.

- 1 Claim 17 reads "[...] the upper electrode is supplied with a positive voltage". However, a voltage can only be defined between two poles. The second point of reference (pole) for the positive voltage is not defined in claim 17, the voltage is therefore not well-defined, rendering claim 17 unclear (Art 6 PCT) to such an extent that an examination of novelty and inventive step is not feasible.
- 2 Claim 27 refers back to claim 22, which itself refers back to claim 21. In neither of the claims the "minimal energy", which is claimed to be a certain value in claim 27, is defined. Claim 27 is thus unclear (Art 6 PCT) to such an extent that an examination of novelty and inventive step is not feasible.

Re Item V.

- 1 The following document is referred to in this communication:
D1 : US 6 407 388 B1 (FROSIEN JUERGEN) 18 June 2002 (2002-06-18)
D2: US-B-6 407 3881 (FROSIEN JUERGEN) 18 June 2002 (2002-06-18)
D3: WO 99/46797 A (ESSERS ERIK) 16 September 1999 (1999-09-16)
- 2 INDEPENDENT CLAIM 1
- 2.1 The subject-matter of claim 1 is not novel in the sense of Article 33(2) PCT , because document D1 discloses (the references in parenthesis applying to this document):
An objective lens arrangement comprising a magnetic lens (11) and an electrostatic lens (10), wherein the electrostatic lens includes upper and lower electrodes (10 a, 10 b) arranged in a spaced apart coaxial relationship along an optical axis of the lens arrangement.
- 3 INDEPENDENT CLAIM 18

The only substantial difference of claim 18 with respect to claim 1 is that the upper and lower electrodes be associated with a separate voltage supply. As far as this feature is can be understood (see remarks on item VIII below), this feature is disclosed implicitly in document D1, as the electrodes would not work as electrostatic lens without voltage being supplied, thus requiring a voltage supply.

Independent claim 18 is thus not novel (Art 33(2) PCT).

4 INDEPENDENT CLAIM 19

The additional technical features of claim 19 are standard features of an electron microscope and at least not inventive (Art 33(3)) as far as not already disclosed, be it implicitly, in document D1.

5 INDEPENDENT CLAIMS 20 and 21

Concerning independent method claims 20 and 21, what has been said above applies *mutatis mutandis*. Applying a predetermined voltage (claims 20) and regulating a voltage supply to the electrode (claim 21), can not involve an inventive step (Art 33(3) PCT), as far as not already disclosed, be it implicitly, in document D1.

6 INDEPENDENT CLAIM 26

The additional technical feature of claim 26 is, notwithstanding the severe lack of clarity (see point VIII below), already disclosed in document D1, see column 1 line 20 ("retarding field")

Claim 26 is thus not novel (Art 33(2) PCT).

7 DEPENDENT CLAIMS

It appears that the additional technical features of dependent claims 4, 5, 8 14-16 do not exceed what the person skilled in the art would standardly use in a similar apparatus, thus questioning the inventive step of these claims.

Regarding dependent claims 6 and 7, it appears that giving conical shape to lower polepieces is a known solution for solving the problem of providing space for tilting the sample, thus questioning the inventive step of these claims.

Claims 9-12 appear to be disclosed in document D2, thus these claims lack novelty; claim 13 appears to be rendered obvious by a combination of documents D3 and D2.

Re Item VII

- 1 Claim 3 is drafted as being dependent on claim 1, however the additional technical feature of claim 2 (being dependent on claim 1) is present in claim 3 which therefore is dependent on claim 2 and should be drafted accordingly.
- 2 The additional technical features of claim 7 (being dependent on claim 1) appear to be identical of the additional technical features of claims 6 and 5 (claim 6 being dependent on claim 5, the latter being dependent on claim 1).
Claim 7 thus needs to be deleted.
- 3 The claims do not fulfill the requirements of Rule 6.3 (b) (two part form) and Rule 6.2 (b) (reference signs).

Re Item VIII

- 1 In claim 18, the term "associated with a separate voltage supply" is unclear. Firstly, the meaning of "separate" is unclear, as the voltage supply of the electrodes must be connected in some way to each other to ensure defined potentials. Secondly "associated" is vague and undefined; either the electrode is connected or not to a voltage supply, association is not an issue.
- 2 In claim 26, it is not apparent which features are claimed as technical features and which are effects resulting therefrom (" thereby reducing..."), rendering claim 26 unclear.